REMARKS

Claims 1, 2, 5-7, 9, 12-15, and 18-25 are pending in the present Application. Applicant appreciates Examiner's explanations in the Response to Arguments.

Claim 1 has been objected-to as reciting "second hash second message" and "first hash first message". Applicant has amended claim 1 appropriately.

Claims 1, 2, 9, 12, 13, 15, 18, 23, and 25 have been rejected under 35 U.S.C.§103(a) as being unpatentable over U.S. Patent No. 6,470,329 to Livschitz ("Livschitz") in view of U.S. Patent Application Publication No. 2002/0029214 by Yianilos et al. ("Yianilos").

Applicant has explained the teaching of Livschitz and how Livschitz lacks disclosure of Applicant's claimed invention in previous communications. Applicant continues to maintain that Livschitz does not alone disclose Applicant's claimed invention. Furthermore, Examiner has observed that Livschitz does not disclose generating, as expressed in Applicant's claim 1 for example, "a first hash pursuant to a first hash technique of a first computational intensity and based on the database values...and communicat[ing] said first hash to the network part" and generating "a second hash pursuant to a second hash technique of a second computational intensity... and communicat[ing] said second hash to the network part... in which said second computational intensity is greater than said first computational intensity and requires a greater amount of communication channel capacity to communicate said second hash than first hash." Yianilos has been introduced as teaching this missing feature.

Applicant has explained, in previous communications, the teaching of Yianilos and how Yianilos lacks disclosure of the foregoing feature of Applicant's claimed invention. Moreover, Applicant had introduced the feature of first and second messages for the communication of the

first hash and the second hash, respectively. Considering the first and second messages feature first, Examiner has indicated that because Yianilos transfers digests from a second "hash" in communication rounds associated with the Get_All_Hashes function communication, the second message for Applicant's second hash has been disclosed. Examiner has submitted that each round transfers a digest in order to identify each discrepancy. Applicant respectfully disagrees for the reasons that follow. First, when a small number of records are found in Yianilos' key interval, the Get_All_Hashes function is invoked and a digest for each of the records in the interval is transferred. (See lines 9-12 of paragraph [0083]). Yianilos speaks of a trade-off between key interval size and number of communication rounds: large key interval sizes reduces the number of rounds but each round generates heavy network traffic, while small key interval sizes increases the number of rounds but with smaller network traffic. Yianilos does not, however, teach the transfer of one record digest for each communication round. Further, Yianilos does not teach the transfer of the entirety of the second hash (Yianilos' Get_All_Hashes invocation) in one communication round (i.e., Applicant's "second message"). See paragraph [0085]. Thus, Applicant's "communicat[ion of] said second hash to the network part in a second message on said communications channel" has not been taught by Yianilos. Nevertheless, for the sake of clarity, Applicant has added the phrase "the entirety of" for the communication of the second hash in the second message in the amended independent claims.

Second, Applicant has claimed "a second hash technique of a second computational intensity...said second computational intensity is greater than said first computational intensity and requires a greater amount of communication channel capacity to communicate said second hash second message than said first hash first message" in claim 1. Examiner has stated a belief

that Yianilos teaches that the Get_All_Hashes function is more computationally intensive than the Get_Interval_Hashes function. Applicant respectfully disagrees, particularly with the complexity of the computation of the "hash". As Applicant has claimed, the "hash" is that information pertaining to records which is communicated to a network. To be equivalent, Yianilos's "hash" must be that information that is transferred over the network. Yianilos teaches that Yianilos's synchronization algorithm starts with a computation of "a single summary of all records lying in the given key interval. The Get_Interval_Hashes function is invoked for this." (Lines 2-4, paragraph [0083]). Yianilos' Get_Interval_Hashes function does not compute a summary, it "returns a list of triplets of the form (key_interval, num_records, hash)...[the hash being] a fixed size digest..." (Lines 3-8, paragraph [0071]). "Maintained along with each data record is a fixed-length digest computed by a cryptographically strong function such as the well-known MD5 algorithm." (Lines 3-6, paragraph [0017]). A summary is calculated by an "exclusive or (XOR) of the digest values associated with each record in the specified range." (Lines 8-9, paragraph [0017]). Thus, before Yianilos' single summary is transferred to the local side for comparison (presumed equivalent to Applicant's first hash communicated via Applicant's first message), a digest must be cryptographically calculated for each data record, each digest in the key interval must be located, and XORed with all other digests in that interval.

On the other hand for the presumed equivalence to Applicant's second hash communicated via Applicant's second message, the Get_All_Hashes function outputs "a list of pairs of the form (key, hash). The list has one pair for each record in the database whose key field belongs to I...the second element is a fixed size digest of the record." (Lines 2-6, paragraph [0070]). "If the remote database only has a small number of records lying in the key interval,

then digests for all those individual records are transferred from the remote to the local side (the Get_All_Hashes function is invoked here), and a record-by-record comparison is made [after transfer] to identify discrepancies." (Lines 9-14, paragraph [0083]). The computational complexity of creating Yianilos' second "hash" equivalent is clearly less, at least for the reason that an XOR of all the digests does not have to be calculated. Thus, Applicant's claimed "second computational intensity is greater than said first computational intensity" is not taught by Yianilos.

Also, Applicant has claimed the first hash technique being "based on the database *values* of the mobile-copy database" and the second hash technique being "based upon the database *records* in the mobile-copy database". Yianilos teaches that both Yianilos' equivalent hashes are based upon the digests of the database records. See the definitions of Get_All_Hashes and Get_Interval_Hashes.

All of the elements of Applicants' claim 1, as expressed in the whole of the words of Applicant's claim 1, have not been disclosed by Livschitz or Yianilos, considered alone or in combination. For this reason, a *prima facie* case of obviousness has not been made and Applicants believe claim 1 to be allowable over the cited art. For the same reasons, independent claims 15 and 23 are also believed allowable. Dependent claims 2, 9, 12, 13, 18, and 25 are dependent upon presumed allowable independent claims and are themselves presumed allowable for this reason.

Dependent claims 21, 22, and 24 have been rejected under 35 U.S.C.§103(a) as being unpatentable over Livschitz and Yianilos and further in view of U.S. Patent Application Publication No. 2002/0120648 by Ball. Examiner has rejected claims 5-7 under 35

U.S.C.§103(a) as being unpatentable over Livschitz and Yianilos and further in view of U.S. Patent No. 5,809,494 to Nguyen. Examiner has also rejected claims 14, 19, and 20 under 35 U.S.C.§103(a) as being unpatentable over Livschitz and Yianilos and further in view of U.S. Patent No. 5,684,990 to Boothby. Claims 5-7, 14, 19, 20-22, and 24 are dependent upon presumed allowable independent claims and, by virtue of such dependency, are themselves presumed allowable.

In light of the foregoing amendment and remarks, Applicant now believes all of the pending claims to be allowable. Examiner is respectfully requested to withdraw the claims objection and rejection, reconsider the present Application, and pass the present Application, as amended, to allowance.

Respectfully submitted,

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